



Department of Civil and Environmental Engineering

DISTINGUISHED SEMINAR

Big Data – A New Research Frontier in Civil Engineering



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**Monday
March 25,
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101 Churchill
Hall
12:00 PM

*This seminar is free and
open to the public.*

Abstract: Recent advances in performance-based earthquake engineering and existing information technologies provide opportunities to develop extremely granular inventories of the built environment and assess its vulnerabilities to earthquakes as well as other hazards. This presentation focuses on bridges—which are arguably the most critical elements of a transportation network—and delineates the ingredients needed to bring a regional seismic assessment tool to fruition. These ingredients range from site-specific ground motion estimation to automated development of analysis models for bridges using data harvested from publicly available repositories, to damage and economic loss assessment. After identifying the ingredients, an overall framework is articulated for regional risk assessment of transportation networks. Several application examples are provided to demonstrate the viability of the envisioned approach, and its natural extensions to other areas including structural performance monitoring and rapid post-event assessment.

Bio: Ertugrul Taciroglu earned a B.S. degree in 1993 from Istanbul Technical University, and MS and PhD degrees from the University of

Illinois at Urbana-Champaign (UIUC) in 1995, and 1998, respectively. After a stint at the Center for Simulation of Advanced Rockets (UIUC) as a postdoctoral researcher, he joined the Civil & Environmental Engineering Department at UCLA in 2001. His research activities span the disciplines of theoretical & applied mechanics and structural & geotechnical earthquake engineering. He is currently conducting projects on soil - structure interaction analyses, system identification and structural health monitoring, performance-based regional seismic assessment, and simulation of structural response under extreme loads. Dr. Taciroglu is the 2006 recipient of a U.S. National Science Foundation CAREER award, and the 2011 Walter Huber Prize of the American Society of Civil Engineers (ASCE). In 2015, he was elected to become a Fellow of the Engineering Mechanics Institute of the American Society of Civil Engineers (ASCE). He is a Managing Editor of the ASCE Journal of Structural Engineering, and serves on the Editorial Boards of ASCE Journal of Engineering Mechanics, EERI Earthquake Spectra, Int. J. of Structural Control & Health Monitoring, and Soil Dynamics & Ea. Engineering.



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